

A photograph of a swampy forest. In the foreground, several large, weathered tree stumps stand in shallow, murky water. The water reflects the surrounding trees and foliage. In the background, a dense forest of tall trees with thick trunks and lush green leaves rises. Sunlight filters through the canopy, creating dappled light on the water and trees.

# SWAMPSCAPES

Study Guide

*swampscapes.org*





# OUR STORY

*Before there were cities, there were swamps*

Many of us are disconnected from the beauty of swamps and the vital role they play in filtering water, fostering life, and buffering storms. Today, coastal development, pollution, and sea-level rise are threatening these invaluable ecosystems. One of the biggest threats to swamps is a human disconnect from the environment and a lack of understanding of the role that swamps play in human survival. In a time of accelerated change and unpredictable weather, it has never been more important to look, listen, and learn from the swamps around us.

This is especially true for South Florida, home to the Everglades. Up until 1900, all of South Florida was one gigantic swamp. To make way for development, the city drained the swamp and diverted the natural water flow, changing its essential water filtering and supply system forever. A rapid expansion of urbanization and agricultural growth has led to a host of environmental problems, making the Everglades a skeleton of what it once was. We can't turn back the clock, but we can learn to co-exist with our disappearing swamps and find ways to negotiate a fast-changing future.

Through passionate local guides, an interactive Swamp Symphony, a VR interactive, and a photo installation, this documentary project leads users into the depths of Florida's swamps and to the people who care about them.

## FURTHER RESOURCES

*Gladesmen: The Last of the Sawgrass Cowboys*,  
<http://www.gladesmenfilm.com>

*Mirage* by Cynthia Barnett  
*Swamplandia* by Karen Russell

*Tomorrow's Biodiversity* by Vandana Shiva

*The Everglades: River of Grass* by Marjory Stoneman Douglas

*The Sixth Extinction: An Unnatural History* by Elizabeth Kolbert

*The Swamp: The Everglades, Florida and the Politics of Paradise* by Michael Grunwald

*The Water Will Come: Rising Seas, Sinking Cities and the Remaking of the Civilized World* by Jeff Goodell.



# ONE GOAL: MULTIPLE PLATFORMS

*“There are no other Everglades in the world” – Marjory Stoneman Douglass*

Our goal for this multi-platform documentary project is to promote swamp literacy by fostering awareness and connections to Florida’s iconic swamps and swamps more generally.

*SwampScapes* incorporates four unique and connected media platforms.

**Website:** The site features short video portraits, immersive 360° landscapes, and an interactive Swamp Symphony where users can listen to swamp sounds and create their own swamp soundscapes.

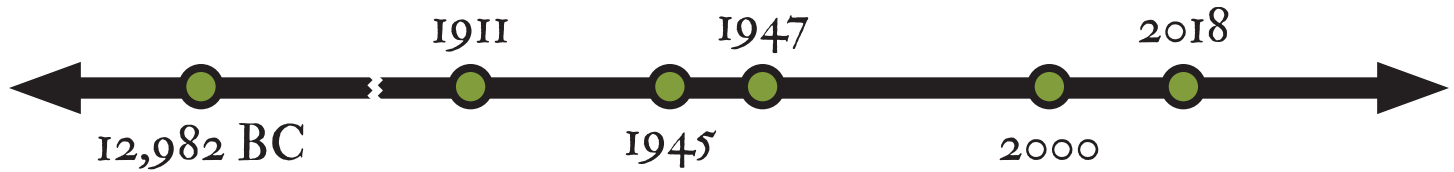
**Interactive VR documentary:** An interactive experience of our seven unique swampscapes permitting viewers to choose their own path in the diverse ecosystems of the swamp.

**VR Film:** A guided journey to the Everglades, one of the most diverse swamps in the world. From the tree tops of urban swamps to the remote sloughs of the Fakahatchee swamp, users will immerse themselves in stunning landscapes and discover some of the passionate protectors of Florida’s swamps. Meet Betty, a Miccosukee water activist who runs her own airboat business and Donna, a raptor biologist who monitors hawk nests to prevent extinction. Follow Larry, an algae expert, who calls attention to the frightening long-term impacts of polluted water or Win, a disturbance ecologist speaking of human-caused disturbances. Swampscapes involves seven unique swamp sites and guides.

**Photo Exhibit:** An installation that includes photographs of the Everglades that challenge viewers to consider their own mediated relationship with the swamp.



# TIMELINE



## **15,000 YEARS AGO (12982 BC)**

### **THE FIRST INHABITANTS OF SOUTHERN FLORIDA**

Human habitation of the Southern Florida peninsula dates back 15,000 years ago. Before European colonization, the region was dominated by the native Calusa and Tequest tribes. The Seminoles were forced from Northern Florida into the Everglades during the Seminole Wars of the early 19th century and were able to resist removal by the United States Army. Today, indigenous communities in the Everglades include the Seminoles and the Miccosukee.

## **1911**

### **FROM SWAMP TO FIELD**

A pattern of political and financial motivation and a lack of understanding of the fragile swamp ecosystem have plagued the history of drainage projects in South Florida. Today, there are over 1,000 miles of canals, permitting the development of vast sugar and agricultural fields. While agriculture practices threaten water quality, a future threat is that these areas will be converted into condos, further taxing the land and demanding even more water resources.

## **1945**

### **POPULATION EXPLOSION**

One of the most significant trends of the postwar era was steady population growth. Unparalleled growth is an ongoing challenge for Florida, now the fourth most populous state in the nation.

## **1947**

### **THE EVERGLADES BECOMES A NATIONAL PARK**

The Everglades National Park was founded in 1947 and protects 1.5 million acres of Florida's southern tip. Environmental advocate Marjory Stoneman Douglas was a key contributor to this process.

## **2000**

### **EVERGLADES RESTORATION**

The Comprehensive Everglades Restoration Plan (CERP) is a multi-billion dollar project authorized by Congress in 2000 to undo the damage of the past. The objective is to increase freshwater storage, improve water quality, and re-establish the natural water flow through the greater Everglades ecosystem. Some say this is the largest restoration project in the world and other countries are looking to the Everglades to learn from the experience.

## **2018**

### **FUTURE THREATS TO THE EVERGLADES**

Rising seas and warming temperatures are threatening to worsen damage already done by decades of drainage and pollution caused by development and farming.

# SWAMP SYMPHONY

Biologists at The CREW Land and Water Trust in the Corkscrew Regional Watershed recorded swamp sounds at night over a period of several months to study this fast changing landscape. From 5pm to 5am, they recorded five minutes of sounds. A special feature of our Swamp Symphony are bat calls. Most of us can not hear bat calls but new technologies have permitted CREW biologists to place ultrasonic microphones in flight corridors or near water to record the calls. They used the software, Sonobat, to analyze the sounds. Enjoy the diversity of sounds CREW collected and get inspired to create your own swamp symphony.



**Belted Kingfishers** are stocky, large-headed birds that make a loud rattling call and spend much of their time perched along the edges of water bodies searching for small fish.



**Northern Cardinals** are a long-tailed songbird with a loud, metallic sound. They tend to nest in dense tangles of shrubs and vines.



**Red-shouldered Hawks** are forest raptors. They tend to live in hardwood stands with an open subcanopy, which makes it easier for them to hunt.



**Northern Yellow and Tricolored Bats** rely on ultrasound to hunt. They make high pitched calls and then listen to their own echos to locate prey.



**Green Tree Frogs** have a distinct call that can be heard up to almost a mile away. These frogs often sing right before it begins to rain.



**Southern Leopard Frogs** are found throughout Florida in most shallow freshwater habitats, hardwood forests, and pine flatwoods. The call is sometimes described as a squeaky balloon-like sound.



**American alligators** are usually found in freshwater swamps. They are extremely vocal animals, making loud grunts, or bellows, especially during mating season.



**Great Crested Flycatchers** are a large insect-eating bird that hunts high in the canopy and has a very distinctive call similar to a rising whistle.

# GUIDING QUESTIONS

## Why Swamps?

While the Everglades itself is technically a marsh, this project addresses the larger ecosystem of the Everglades. Swampscapes presents the diverse ecosystems of South Florida as a captured moment in time, and a reminder of the anthropogenic threats they face today. This multi-sensory documentary project sheds light on Florida's Most Endangered ecosystem but is intended to raise questions about swamps worldwide. *Can you identify a swamp near your home?*

## What are the benefits of a swamp?

There are countless benefits of a swamp. Swamps help filter the water, store carbon, buffer the impacts of storms, and serve as habitats for endangered plants and animals. *What can we do to protect the swamps?*

## THE ORCHID CAPITOL

**Mike Owen** is an orchid expert and biologist at the Fakahatchee Strand Preserve State Park, the orchid capital of the United States. Mike takes us on an exclusive swamp walk to find ghost orchids and explains how biodiversity is vital to our survival.

**The Fakahatchee Strand**, a forested wetland, is the largest strand swamp in the world and is 19 miles long, three to five miles wide, and about two to five feet deep. The Everglades itself is 5000 years old.



## What is so special about ghost orchids?

The elusive blooms of the ghost orchid have captured the imagination of people worldwide. Ghost orchids have become extremely rare and endangered due to human-induced habitat destruction, hydrological changes resulting from urban development, and illegal poaching for profit. This plant species has very specific habitat requirements which limit its adaptability to ecosystem changes. Ghost orchid populations are a reflection of anthropogenic changes and the deteriorating effects on the swamp.

*What are the rare plants in your area? Who is working to protect them?*

## What is a swamp walk?

Swamp walks are a unique way to learn and connect to an ecosystem that has been neglected by urbanization. Contact your local park service, such as the Everglades National Park or the Fakahatchee Strand Preserve State Park, for a guided tour or swamp walk. *What are the guided tours of local ecosystems in your area?*



# RIVER OF GRASS



**Betty Osceola**, a member of the Miccosukee tribe and an airboat tour operator, has made it her mission to protect the water of the Everglades. Betty takes us to see how the pollution plume in the cypress swamps is literally suffocating the natural growth of the once pristine region.

**Prairies.** These open grasslands, are seasonally inundated with water and can host various ecosystems from cypress domes to freshwater marshes. Unfortunately, the majority of Florida's prairies have been converted to cattle ranches, sod farms, and citrus groves. These prairies are no longer the thriving grasslands they once were.

## What pollutes the water in the swamp?

Florida has weak regulations when it comes to water flow. Cattle and agriculture runoff pollute the water in the Everglades. Changing water flows and excess chemicals entering the ecosystem has allowed invasive plants to flourish in the area. *What are the water threats in your community?*

# POISON WATER

**Larry Brand**, an algae specialist, explains how fertilizer runoff causes algal blooms that pose frightening yet largely invisible health risks. We follow Larry on his water sampling route which begins at a canal on the edge of the Everglades and ends in the estuaries of Florida Bay.

**Mangroves/Estuaries.** At the crucial interface of Florida's fresh and saltwater ecosystems, mangroves inhabit the coastal and windy river habitats of Florida. Mangroves' ability to withstand harsh conditions make them a natural buffer and stabilizing force against wind and storms for coastal habitats.



## What are algal blooms?

The Everglades and Big Cypress Swamp are wetlands that naturally suck up nutrients. Humans have degraded and destroyed much of the wetlands, converting it to agriculture and urban areas that generate and release nutrients, as well as other pollutants. When these nutrients reach our coastal waters, they generate Harmful Algal Blooms. These Harmful Algal Blooms generate toxins that contaminate our seafood and the air we breathe, and affect human health. Currently, we mostly know about the short term health effects of these toxins. Unfortunately, there is reason to believe there are also significant long term human health effects resulting from exposure to these algal toxins generated by the human systems that have displaced the natural wetland ecosystems of South Florida. *Who samples the water in your community?*

## Where can I learn more about the Comprehensive Everglades Restoration Plan (CERP)?

<https://www.nps.gov/ever/learn/nature/cerp.htm>



# TREE ISLAND

**Reverend Houston R. Cypress**, a Miccosukee artist and co-founder of Love the Everglades Movement, explains the vital role of water and tradition in the Everglades. Together we visit “Where The Little Pot Sits,” a tree island in the heart of the Everglades.

**Tree Island.** The Florida Everglades are dotted with hundreds of tree islands, elevated tree-covered mounds that offer refuge to animals like birds and panthers. Some scientists suggest these were once ancient trash mounds or shell middens, which accounts for the height. Today, tree islands in the Everglades are managed by indigenous families. The number and area of tree islands have been shrinking for decades.

## What have people done to protect the Everglades?

Members of the Miccosukee Tribe and others have filed lawsuits to protect the Everglades, such as a mandate to restore water that has been diverted for development and agriculture. Other methods include bringing awareness to the issues, forming coalitions, educating youth, and keeping tribal traditions alive.

*How can you protect your own community?*



# MULTIPLE DISTURBANCES

**Win Everham**, a disturbance ecologist, takes us to a recently burned pine forest to explain the impacts of human caused disturbances. Explore with Win the aftermath of fires in the pinelands.

**Pineland.** The pinelands of Florida are rugged landscapes dominated by slash pines and an undergrowth of diverse plant species. These ecosystems depend on wild and now, human caused (anthropogenic) fires, to clear out the large pines that would otherwise be blocking light to the pine seedlings.  
<https://vimeo.com/267503066>

## What kind of disturbances does South Florida face?

The Everglades faces multiple disturbances including hurricanes and human-driven changes such as urbanization, agriculture, habitat destruction, the introduction of invasive species, and changes in hydrology and water quality. *What kind of disturbances does your community face?*

## How does fire ecology work?

Researchers and professionals prescribe monitored and controlled fires in an environment to stimulate regrowth. In the Everglades, native populations tend to rebound after fires. *What is the history of fires in your area?*



# CITY SWAMP

**Donna Molfetto**, a raptor biologist, takes us to what was once a thriving hardwood hammock but is now an urban swamp. She explains the importance of tracking red shouldered hawks to see if species will survive human expansion.

**Tropical Hardwood Hammock** Situated in slightly higher elevations, hardwood hammocks are dominated by tropical mahogany, gumbo-limbo, and an undergrowth of ferns and air plants. These unique ecosystems are under immediate threat and have been significantly impacted by human development, anthropogenic fires, agriculture, and alterations in water flow.



## What kinds of threats do wildlife suffer from living so close to an urban environment?

Wildlife in the Everglades is constantly threatened by the effects of urban sprawl and habitat destruction. Changing water quality and flows also disrupt these ecosystems. Wildlife that can not adapt lose their habitats and eventually face extinction. *What are the wildlife that are threatened in your community?*

## What is Extinction?

Extinction is the loss of a species population, when there are no more living members of that species. *Consider the birds or wildlife that live in your immediate community. What kinds of threats do they face? What can you do to protect them?*



## Guide Credits

Photos: Grant Bemis

Design: Savannah Geary

Text: Laura Martinez & Liz Miller